5.11 TRAFFIC AND TRANSPORTATION

SECTION 5.11 TRAFFIC AND TRANSPORTATION CONTENTS

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5.11 TRAFFIC AND TRANSPORTATION

This section addresses potential impacts of the Tesla Power Project (TPP) on traffic and transportation systems in the project area. The analysis considers regional and local roadways, access to the project site, and construction- and operation-related traffic.

5.11.1 Affected Environment

5.11.1.1 Regional Setting

Figure 5.11-1, Regional Transportation Setting, and Figure 5.11-2, Existing Traffic Volumes, illustrate the major roads, highways, and railways in the project vicinity and the existing roadway traffic volumes. Regional transportation plans that include the project area are described below.

Countywide Transportation Plan

The Alameda County Congestion Management Agency (ACCMA) has implemented the Countywide Transportation Plan (CTP). The Countywide Transportation Plan describes the vision for meeting future transportation needs, including specific projects, programs and policies needed to provide a balanced transportation system in Alameda County. This long-range policy document looks at future population and employment patterns and is used to guide funding and service decisions over the next 25 years, addressing freeways, buses, rail, ferries and other options such as telecom, bicycling and pedestrian facilities (ACCMA, 2001).

Regional Transportation Plan

The Regional Transportation Plan (RTP) lays out how federal, state and regional transportation funds expected to flow to the Bay Area during the next 25 years will be spent to maintain, manage and improve the region's system of roadways, public transit, and bicycle/pedestrian facilities. Every three years, the Metropolitan Transportation Commission (MTC), the transportation planning, coordinating and financing agency for the nine-county Bay Area, is required to update the current RTP (ACCMA, 2001).

East County Area Plan – Transportation Element

The Transportation Element of the East County Area Plan sets up county goals and guidance policies for transportation improvements. Its goal is to create and maintain a balance, multi-modal transportation system that provides for the efficient and safe movement of people, goods, and services (ECAP, 1994).

5.11.1.2 Site Location and Road Access

The TPP is located in north-eastern, unincorporated Alameda County near the San Joaquin County line, on Midway Road The project site is bordered by the Southern Pacific rail lines to the north and Midway Road to the east. The roads in this agricultural area are generally two lanes, with collector roads having little or no shoulder area. Lane widths vary from 10 to 12 feet.

Normal access to the TPP site will be from Midway Road. Internal TPP circulation will be provided by a 20 foot wide loop road.

5.11.1.3 Regional Access

Regional access to the site from the San Francisco Bay area and the Stockton area is provided by I-580. I-205 provides access to the Tracy area to the east of the project site and access to I-580 for traffic coming from the City of Stockton.

5.11.1.4 Local Street System

As illustrated in Figure 5.11-1 the east-west roads in the area of the project site are Patterson Pass Road and Altamount Pass/Grant Line Road. Patterson Pass Road provides access to the community of Livermore to the west and to I-580 and I-205 to the east. Altamount Pass/Grant Line road provides access to the community of Livermore to the west and Tracy to the east. Grant Line Road also provides access to I-580. Midway Road, Mountain House Road, and the eastern most portion of Patterson Pass Road, in San Joaquin County are the north-south roads in the area of the project site. Midway Road provides access to the site and runs between Grant Line Road and Patterson Pass Road. Mountain House Road begins at Grant Line Road and runs north to Byron Rd. Patterson Pass Road turns north at Schulte Road and crosses Grant Line Road and ends at Byron Road.

All of the roads in the vicinity of the project area are two-lane rural highways. See Table 5.11-2 for road classification and capacities.

The Western Pacific Railroad crosses Patterson Pass Road approximately one-half mile southwest of the site.

5.11.1.5 Public Transportation

Currently, there is no available public transportation serving the project area (Alameda County Transportation Authority, 2001).

5.11.1.6 Pedestrian and Bicycle Facilities

A majority of the roads in the area are narrow with little or no shoulder and few sidewalks. There are currently no designated bicycle routes or bicycle lanes in the area. The East County Area Plan indicates a proposed regional trail along the abandoned railway line adjacent to the project site. It is currently not known when this trail will be built.

5.11.1.7 Level of Service Analysis – Current Conditions

The existing transportation and circulation system has been described in the preceding section. In order to establish a threshold for evaluation of the addition of project traffic to the road system, the existing traffic conditions must be determined by the calculation of "Level of Service" (LOS) measures (Transportation Research Board, 1985). The LOS calculations (Table 5.11-1) are generally based on the relationship of the traffic volume to the capacity of the road system to accommodate the traffic flow. The LOS measures range from LOS "A" (free flow) through LOS F (grid locked) traffic conditions. A common threshold for determining impacts of significance is if a LOS value falls below a measure of "C". An

operations measure below LOS C would be considered a deficient operating condition requiring mitigation.

Table 5.11-1. Level of Service (LOS) Criteria

LOS	Description	Average Vehicle/ Capacity Ratio
A	Free flow; insignificant delays	0.0 - 0.59
B	Stable operation; minimal delays	0.6 - 0.69
C	Stable operation; acceptable delays	0.7 - 0.79
D	Approaching unstable; queues develop rapidly but no excessive delays	0.8 - 0.89
E	Unstable operation; significant delays	0.9 - 0.99
F	Forced flow; jammed conditions	N/A

The capacities used to evaluate road segments are based on the 1985 Highway Capacity Manual criteria (Transportation Research Board, 1985). The maximum design AADT capacity and peak hour lane capacities represent LOS E conditions. Table 5.11-2 describes classifications and capacities used in this evaluation.

Table 5.11-2. Road Classifications and Capacity

Classifications	Capacities	
	AADT	Peak Hour
4-Land Urban Freeway	80,000	2000/Lane
4-Lane Expressway	40,000	1800/Lane
2-Lane Rural Highway	15,000	1700/Lane
2-Lane Collector	12,000	1700/Lane
2-Lane Rural Collector	10,000	1500/Lane
2-Lane Rural Access Road	5,000	1200/Lane

Existing traffic volumes, capacity, and characteristics are summarized in Table 5.11-3.

According to Caltrans 1997 Route Segment Report (Caltrans, 1998), the nearest state highway (I-580) had an accident rate of 0.52 accidents per million vehicle-miles traveled at the I-580/I-205 junction, located northeast of the site. For the year 2000, the CHP counted 16 accidents at the same junction (California Highway Patrol, 2001).

5.11.2 Environmental Impacts

The significance criteria have been developed using guidance provided in the California Environmental Quality Act (CEQA), Appendix G (Title 14 California Code of Regulations 15000 et seq.) and relevant local policies. Impacts of the proposed project to transportation and circulation will be considered significant if the following criteria are met:

Table 5.11-3. Existing Traffic Characteristics of Local Highways and Roads in the Project Area

Road or Highway	Existing Traffic		Capacities[3]		V/C (LOS)	
	AADT	Peak Hour Traffic[2]	AADT	Peak Hour Traffic	AADT	Peak Hour Traffic
Interstate 580						
San Joaquin-Alameda County Line	28,500	2,850	40,000	4,000	0.71(C)	0.71(C)
Jct. Route 205 East	112,000	8,600	80,000	8,000	>1.0(F)	>1.0(F)
Grant Line Road	117,000	9,000	80,000	8,000	>1.0(F)	>1.0(F)
Interstate 205						
Jct. Route 580	83,000	5,100	80,000	8,000	>1.0(F)	0.63(B)
Alameda-San Joaquin County Line	83,000	5,100	80,000	8,000	>1.0(F)	0.63(B)
Midway Road	130[1]	13	15,000	3,400	0.01(A)	0.01(A)
Patterson Pass Road	450[1]	45	15,000	3,400	0.03(A)	0.07(A)
Grant Line Road	1,795[1]	179	15,000	3,400	0.1(A)	0.05(A)
Altamount Pass Road	2,830[1]	283	15,000	3,400	0.2(A)	0.08(A)
Mountain House Road	1,685[1]	168	15,000	3,400	0.1(A)	0.05(A)
Byron Road	4,705[1]	470	15,000	3,400	0.3(A)	0.1(A)
Kelso Road	360[1]	36	15,000	3,400	0.02(A)	0.01(A)

(1) Source: Alameda County Transportation Authority (2001).

(2) Based on 10% of AADT, or as noted.

(3) Source: Transportation Research Board (1985).

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- Substantially increase hazards due to a design feature or incompatible uses
- Result in inadequate emergency access
- Result in inadequate parking capacity
- Conflict with adopted policies, plans, or programs supporting alternative transportation

5.11.2.1 Construction Phase Impacts

Table 3.7-2 provides an estimate of the average and peak construction workforce vehicles and number of truck deliveries expected during project construction. Based on these estimates, Table 5.11-4 presents a summary of the round trip generation for the project construction phase. For traffic impact analysis purposes, the truck trips have been converted to Passenger Car Equivalent (PCE) trips by applying a factor of 2.0 to reflect the additional impact that large trucks have on street system operations beyond that of a normal passenger car. This factor is recommended from the appropriate tables in the 1985 Highway Capacity Manual based on terrain and roadway geometrics. For the scheduled peak month of construction activity, the proposed project will generate a total of 1,388 actual one-way vehicle trips per day and approximately 1,478 PCE one-way trips per day as a measure of combined truck and passenger vehicle impact on the street system (Table 5.11-4).

Table 5.11-4. Trip Generation Summary – Construction Phase

Traffic Source	Vehicle Daily Round Trips		Vehicle Daily One-Way Trips		PCE[1] Daily One-Way Trips		PCE Peak Hour[4]	
	Average	Peak[2]	Average	Peak[2]	Average	Peak[2]	Average	Peak[2]
Workers[3]	324	649[3]	648	1,298	648	1,298	259	519
Delivery Trucks	20	45	40	90	80	180	2	5
Total	344	694	688	1,388	728	1,478	261	524

(1) A passenger car equivalent (PCE) factor of 2.0 was applied to delivery trucks and heavy trucks.

(2) "Peak" refers to scheduled peak months of construction activity (May and June, 2003).

(3) Assumes 1/3 of workers carpool (1.5 persons per vehicle).

(4) Assumes 80% of workers and 10% of deliveries arrive or depart during peak traffic hour.

Construction traffic impacts to local and regional roads will be determined by the routes used by construction workers and delivery trucks when arriving and departing from the project site. Because most workers and deliveries of building supplies and equipment will come from the greater Tracy/Stockton area, the primary route to the site will be west on I-205 and exit on

Patterson Pass Road heading south, then turn north on Midway Road to the site. For the purposes of this analysis, the following assumptions were made:

- When entering or leaving the site at Midway Road, approximately 20% of the traffic will travel north of the site on Midway Road to Grant Line Road and the remaining 80% will travel south of the site on Midway Road to Patterson Pass Road.
- Most of the traffic using Midway Road south of the site will originate from the Tracy/Stockton area; we have assumed 60% will travel north on Patterson Pass Road to I-205 east toward the communities in and around the Tracy/Stockton area and 10% will travel east on Schulte Road toward the City of Tracy. The other 30% will use I-580 to travel north or south from the site.
- Most of the traffic using Midway Road north of the site will originate from the Livermore area; we have assumed 50% will travel west on Grant Line Road to I-580 west toward the city of Livermore, while 10% will travel east on Grant Line Road to the City of Tracy. Traffic continuing north on Mountain House Road is assumed to represent 10% of this subtotal, and the remaining 30% is assumed to travel west on Altamount Pass Road toward the City of Livermore.
- Approximately 80% of the construction workers will arrive or depart during peak traffic hours; 10% of delivery trucks will arrive or depart during peak traffic hours.

Based on these assumptions, the traffic generated by project construction would be distributed on local roads as illustrated in Figure 5.11-3. For determination of impacts to LOS, the traffic generated by the project was added to the existing traffic levels on roads in the project area as shown in Table 5.11-5. Project construction traffic will not cause a change to the LOS of any project area roads for average or peak hour conditions.

During plant construction, measures will be taken to reduce construction related traffic on the surrounding roadways. A traffic control plan will be developed and enacted so that the LOS on local roads and intersections will not be seriously degraded. The traffic control plan will outline what measures will need to be taken on a month-to-month basis based on the expected construction traffic volumes.

The construction contractor will be required to prepare a construction traffic control plan and implementation program which addresses timing of heavy equipment and building materials deliveries, an employee trip reduction plan; and signing, lighting and traffic control device placement. Methods for mitigating the traffic impacts caused by construction might include advance warning flashers and signing on Midway Road and Patterson Pass Road.

The following specific best management practices will be incorporated into the construction traffic control plan:

- Truck loads will not exceed legal limits.
- Cover loads with full tarp if wind is a problem.
- Sweep, clean or hose truck and trailers after loading and before entering highway.

Table 5.11-5. Construction Phase - Existing Plus Project-Generated Traffic During Peak Construction Month[1]

Road or Highway	Existing Traffic[2]		Capacities		Project Plus Existing V/C (LOS)	
	AADT[3]	Peak Hour Traffic[4]	AADT	Peak Hour Traffic	AADT	Peak Hour Traffic
Interstate 580						
San Joaquin-Alameda County Line	28,609	3,145	40,000	4,000	0.71(C)	0.78(C)
Jct. Route 205 East	112,109	8,704	80,000	8,000	>1.0(F)	>1.0(F)
Grant Line Road	117,135	9,052	80,000	8,000	>1.0(F)	>1.0(F)
Interstate 205						
Jct. Route 580	83,109	5,204	80,000	8,000	0.65(B)	0.65(B)
Alameda-San Joaquin County Line	38,109	5,204	80,000	8,000	0.65(B)	0.65(B)
Midway Road	176	17	15,000	3,400	0.01(A)	0.01(A)
Patterson Pass Road	1,032	103	15,000	3,400	0.06(A)	0.03(A)
Grant Line Road	1,831	183	15,000	3,400	0.12(A)	0.05(A)
Altamount Pass Road	2,848	284	15,000	3,400	0.18(A)	0.08(A)
Mountain House Road	1,703	170	15,000	3,400	0.11(A)	0.05(A)

(1) Scheduled peak construction months are March and April, 2003.

(2) Existing traffic from Table 5.11-3.

(3) Based on PCE daily one-way trips shown in Table 5.11-4.

(4) Based on PCE for peak hour shown in Table 5.11-4.

- Maintain mufflers, brakes, and all loose items on trucks to minimize noise and ensure safe operation.
- Keep truck operations to quietest operating speeds, drivers should be advised of downshifting and vehicle operations through residential communities.
- Strict law enforcement by both highway patrol and city traffic enforcement officers to encourage truck driver/operators to adhere to laws.

Natural Gas Pipeline

Construction of the natural gas pipeline is anticipated to take two months (see Table 3.7-3). A peak monthly workforce of approximately 30 employees will be required. An average monthly workforce of 40 is estimated over the duration of the pipeline construction.

Construction of the natural gas pipeline requires the use of heavy equipment, including dozers, excavators (backhoe, loader, motor grader, and trencher), cranes, water trucks, and fuel trucks.

In addition to the deliveries of heavy equipment, construction materials and supplies, piping, concrete and rebar, miscellaneous consumables, and other construction equipment will be delivered to the pipeline route by truck.

The pipeline route is approximately 2.8 miles long and most of the route is adjacent to paved rural roads with very low existing traffic volume. Given the short construction period, the limited construction at any one location, the small number of truck deliveries, and their distribution along the 2.8 mile route, traffic impacts associated with construction equipment and materials deliveries for the natural gas pipeline will be insignificant.

5.11.2.2 Operation Phase Impacts

No significant long-term traffic impacts are expected as a result of the facility's operational workforce and delivery of materials to the site.

Operation of the power plant will require a labor force of approximately 36 full-time employees (see Table 3.8-1) with a maximum of 20 employees during the day shift. Twenty-four parking spaces will be available for employees and visitor vehicles on a paved lot adjacent to the administration building. It is assumed that the majority of the permanent workforce will reside in the communities of or around Tracy, Stockton and Livermore, and that their preferred route to work will be east/west (respectively) on I-580 and south on Patterson Pass Road and north on Midway Road to the project site. This travel route will accommodate the operations related traffic.

During project operation, materials will be delivered by truck to the plant site on a regular, but infrequent basis. Overall, the number of truck deliveries to the site is estimated to be approximately two per day. The anticipated travel routes for materials delivery will be east on I-580 and south on Patterson Pass Road and north on Midway Road to the project site.

Table 5.11-6 summarizes the number of vehicle trips generated by project operations. The employee-based trips were generated by using a rate of 2.5 trips per employee. This rate provides for lunchtime trips, service trips and basic housekeeping functions related to plant operations. Employees will work in either 8-hour or 12-hour shifts (see Table 3.8-1), thus spreading employee trips over 24 hours. For worst-case estimates, it was assumed that 14 of the 20 employees working on the day shift travel during the AM or PM peak traffic hours. Again, the truck trips are PCE trips calculated by multiplying actual truck trips by a factor of 2.0.

Table 5.11-6. Trip Generation Summary – Operation Phase

Site Operations	One-Way Daily Trips	Peak Hour Trips
Employee Vehicles	100(1)	14(2)
Trucks	8(3)	1(4)
Total	**108**	**15**

(1) Employee trips calculated based on number of employees x 2.5.

(2) Ten day-shift employees are assumed to arrive and depart during peak traffic hour (only PM peak hour shown)

(3) Actual number of truck trips x 2.0 to determine PCEs.

(4) Equals 10% of truck trips.

When compared to the existing LOS for roads in the project area (Table 5.11-3), the addition of 108 vehicle/trips per day and 15 vehicle/trips during the peak hour will not cause a change in the LOS for any nearby roads or have a significant impact on traffic. Operation of the proposed project will generate a small amount of traffic that can easily be accommodated by the existing roadway system. Operation of the proposed project: 1) will not generate substantial vehicular movement; 2) will not alter present patterns of circulation; 3) will not alter waterborne, rail, or air traffic; 4) will not substantially increase traffic hazards to motor vehicles, bicyclists, or pedestrians; 5) will not violate adopted LOS standards; 6) will not generate traffic for which impacted routes are not suitable; and 7) will not create demand for new parking that cannot be accommodated by the project design. Therefore, operation of the proposed project is not expected to result in significant impacts on the local transportation system.

5.11.3 Mitigation Measures

There are no significant impacts to traffic and transportation caused by construction or operation of the project, even with the use of a PCE factor to evaluate the impact of heavy trucks on the street system. Therefore, no mitigation measures are proposed for project construction or operation.

5.11.4 Cumulative Impacts

Traffic generated by the project during construction and operation was added to existing traffic on area roads to determine if the project would result in a cumulative impact. The results of this analysis (see Section 5.11.2.1 and 5.11.2.2) indicate that although there will be an incremental increase in traffic on area roads, the increase will not be substantial in relation to existing traffic and will not lead to a change in the LOS of area roads.

5.11.5 Significant Unavoidable Adverse Impacts

No significant unavoidable impacts are anticipated as a result of TPP.

5.11.6 Applicable Laws, Ordinances, Regulations and Standards (LORS)

Design, construction, and operation of the proposed project including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS applicable to traffic and transportation. Project compliance with LORS is summarized in Table 6.1-1.

The following LORS are applicable to the control of traffic and transportation as it relates to the proposed TPP.

5.11.6.1 Federal Authorities and Administering Agencies

49 CFR. Chapter 11, Subchapter C; and Chapter 111, Subchapter B. These authorities establish national standards for the transportation of hazardous materials (Chapter 11, Subchapter C), and national safety standards for the transport of goods and materials and substances over public highways (Chapter 111, Subchapter B, Parts 171-173, 177-178).

The administering agency for the above authority is CalTrans.

5.11.6.2 State Authorities and Administering Agencies

California Vehicle Code § 35780; California Streets & Highways Code §§ 117 and 660-711; 21 CCR 4§ 1411.1-1411.6. These codes state permit requirements for "overload" approvals (transportation permits) for transportation over state highways.

The administering agency is CalTrans.

California Streets and Highways Code § 117, 660-711. This code requires permits for any construction, maintenance or repair involving encroachment on state highway rights-of-way.

The administering agency is CalTrans.

California Vehicle Code § 31300 et seq. The code includes provisions for the transportation of hazardous materials on state highways.

The administering agency is CalTrans.

California Vehicle Code § 31030. This Section identifies commercial shipping routes for specified waste streams.

The administrating agency is CalTrans.

California Vehicle Code §§ 31600-31620. These sections provide regulations for the transport of explosive materials.

The administrating agency is CalTrans.

California Vehicle Code §§ 32100-32109. These sections establish requirements for the transportation of inhalation hazards and poisonous gases.

The administering agency is CalTrans.

California Vehicle Code §§ 34000-34121. This law establishes requirements for the transportation of flammable and combustible liquids over public roads and highways.

The administering agency is CalTrans.

5.11.6.3 Local Authorities and Administering Agencies

Countywide Transportation Plan

The CTP looks at future population and employment patterns and is used to guide funding and service decisions over the next 25 years, addressing freeways, buses, rail, ferries and other options such as telecom, bicycling and pedestrian facilities.

The administering agency is the ACCMA.

Regional Transportation Plan

The RTP lays out how federal, state and regional transportation funds expected to flow to the Bay Area during the next 25 years will be spent to maintain, manage and improve the region's system of roadways, public transit, and bicycle/ pedestrian facilities.

The administering agency is the MTC.

East County Area Plan – Transportation Element

The Transportation Element of the East County Area Plan establishes goals and policies, and identifies implementation measures for County traffic and transportation systems.

The administering agency is the Alameda County Planning Department.

Encroachment Permits. The Alameda County Public Works Department requires encroachment permits for pipelines on right-of-ways and for road improvements.

The administering agency is the Alameda County Public Works Department.

5.11.7 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to traffic and transportation for TPP are provided in Table 5.11-7.

Table 5.11-7. Involved Agencies and Agency Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Alameda County Traffic Engineering 399 Elmhurst Street Hayward, CA 94544	Bob Preston (510) 670-5480	Approval of Traffic Control Plan
California Department of Transportation 1120 N Street Sacramento, CA 95818	Paul Cavanaugh Larry Henneke (916) 654-5266	Overload Limit Permit
Alameda County Permit Department 399 Elmhurst Street Hayward, CA 94544	John Rodgers (510) 670-5429	Encroachment Permit

5.11.8 Permits Required and Permit Schedule

Agency-required permits related to traffic and transportation are summarized below in Table 5.11-8. The listed agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 5.11-8. Permits Required and Permit Schedule

Permit/Approval Required	Schedule
Traffic Control Plan (Alameda County Traffic Engineering)	60 working days prior to implementation or start of construction.
Overload Limit Permits	Approximately 2 weeks prior to delivery.
Encroachment Permit	Approximately 30 days prior to implementation or start of construction.

5.11.9 References

Alameda County Planning Department. 1994. East County Area Plan: A Portion of the Alameda County General Plan (ECAP).

Alameda County Congestion management Agency (ACCMA). 2001. (http://www.accma.ca.gov)

Alameda County Transportation Authority (ACTA). 2001. Personal communication, J. Terrantino, ACTA, and M. dos Santos, Foster Wheeler Environmental Corporation.

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Transportation Research Board. 1985. Highway Capacity Manual.